AMENDMENT NO. 2 NOVEMBER 2020

TO

IS 13920 : 2016 DUCTILE DESIGN AND DETAILING OF REINFORCED CONCRETE STRUCTURES SUBJECTED TO SEISMIC FORCES — CODE OF PRACTICE

(First Revision)

(*Page* 2, *clause* **3.5**, *lines* 2 *and* 4) — Substitute '8 times' *for* '6 times'.

(*Page* 2, *clause* **3.10**, *title*) — Substitute the following for the existing:

'3.10 Ordinary RC Structural Wall (*also called* Shear Wall)'

(*Page* 2, *clause* **3.11**, *title*) — Substitute the following for the existing:

'3.11 Special RC Structural Wall (*also called* Special Shear Wall)'

(*Page* 3, *clause* **5.3.1**) — Substitute the following clause for the existing:

'**5.3.1** Steel reinforcement shall comply with all of the following:

a) Elongation shall be at least 14.5 percent,
b) Ratio of ultimate stress to 0.2 percent proof stress shall not exceed 1.25,
c) Ratio of ultimate stress to 0.2 percent proof stress shall be at least 1.15, and
d) Steel shall be only of strength grades with minimum 0.2 percent proof stress of 415 MPa, 500 MPa or 550 MPa, in addition to other requirements of IS 1786.'

(*Page* 4, *clause* **5.3.2**, *lines* 1 *and* 3) — Substitute 'stress' *for* 'strength'.

(*Page* 4, *clause* **5.3.3**) — Delete.

Price Group 1

[*Page* 6, *clause* **6.3.3**(b) (2)] — Substitute the following for the existing:

‘2) For sway to left:

$$V_{\mathrm{u,a}} = V_{\mathrm{u,a}}^{\mathrm{D+L}} + 1.4\ \frac{M_{\mathrm{u}}^{\mathrm{Ah}} + M_{\mathrm{u}}^{\mathrm{Bs}}}{L_{\mathrm{AB}}} \text{ and}$$

$$V_{\mathrm{u,b}} = V_{\mathrm{u,b}}^{\mathrm{D+L}} - 1.4\ \frac{M_{\mathrm{u}}^{\mathrm{Ah}} + M_{\mathrm{u}}^{\mathrm{Bs}}}{L_{\mathrm{AB}}} ,$$

(*Page* 7, *clause* **7.1**, *para* 1, *last sentence*) — Substitute the following for the existing:

‘The factored axial compressive stress considering all load combinations involving earthquake loads shall be limited to $0.40f_{\mathrm{ck}}$ in all such members, except in those covered in **11**.’

[*Page* 11, *clause* **7.6** (*see also Amendment No.* 1)] — Substitute the following for the existing:

‘In beams and columns, the requirements of this clause shall be met with, unless a larger amount of transverse reinforcement is required from shear strength considerations given in **6.3** for beams and **7.5** for columns.’

[*Page* 13, *clause* **9.1.1**] — Substitute the following for the existing:

‘**9.1.1** *Shear Strength of Concrete in a Joint*

The nominal shear strength τ_{jc} of concrete in a beam-column joint shall be taken as:

$$\tau_{\mathrm{jc}} = \begin{cases} 1.5\sqrt{f_{\mathrm{ck}}} & \text{for joints confined by beams on all four faces} \\ 1.2\sqrt{f_{\mathrm{ck}}} & \text{for joints confined by beams on three faces} \\ 1.0\sqrt{f_{\mathrm{ck}}} & \text{for other joints} \end{cases}$$

The nominal shear stress demand τ_{jv} on the joint shall be estimated as:

$$\tau_{\mathrm{jv}} = \frac{V_{\mathrm{j}}}{A_{\mathrm{ej}}}$$

where V_{j} = horizontal shear force on the joint and A_{ej} is as given in **9.1.2** (a).’

[*Page* 13, *clause* **9.1.2**(a)] — Substitute the following for the existing:

‘a) Design shear stress demand acting horizontally along each of the two principal plan directions of the joint shall be estimated from earthquake shaking considered along each of these directions:

$$\tau_{\mathrm{jdX}} = \frac{V_{\mathrm{djX}}}{A_{\mathrm{ej}}} \text{ for shaking along plan direction X of earthquake shaking,}$$

$$\tau_{\mathrm{jdY}} = \frac{V_{\mathrm{djY}}}{A_{\mathrm{ej}}} \text{ for shaking along plan direction Y of earthquake shaking.}$$

where A_{ej} is effective shear area of joint given by $b_{\mathrm{j}}w_{\mathrm{j}}$, in which b_{j} is the effective breadth of joint perpendicular to the direction of shear force and w_{j} is the effective width of joint along the direction of shear force. The effective breadth of joint b_{j} (*see* Fig. 15) shall be obtained from following:

$$\min\,[\, b_{\mathrm{j}};\ b_{\mathrm{c}} + 0.5h_{\mathrm{c}}\,]\ \textit{if}\ b_{\mathrm{c}} < b_{\mathrm{b}}.$$

where

b_{b} = width of beam,
b_{c} = width of column, and
h_{c} = depth of column in the considered direction.

It shall be ensured that the joint shear capacity of joint concrete estimated using **9.1.1** exceeds both τ_{jdX} and τ_{jdY}.’

[*Page* 14, *clauses* **9.2.1** (a) (1) and **9.2.1** (b) (1), *line* 2 (*see also Amendment No.* 1)] — Substitute ‘**7.6**’ *for* ‘**8**’.

(*Page* 17, *clause* **11**, *line* 1) — Substitute ‘designed’ *for* ‘detailed’.

(CED 39)

Publication Unit, BIS, New Delhi, India